'SPIN-OUT' TECHNOL FROM THE CURRENT

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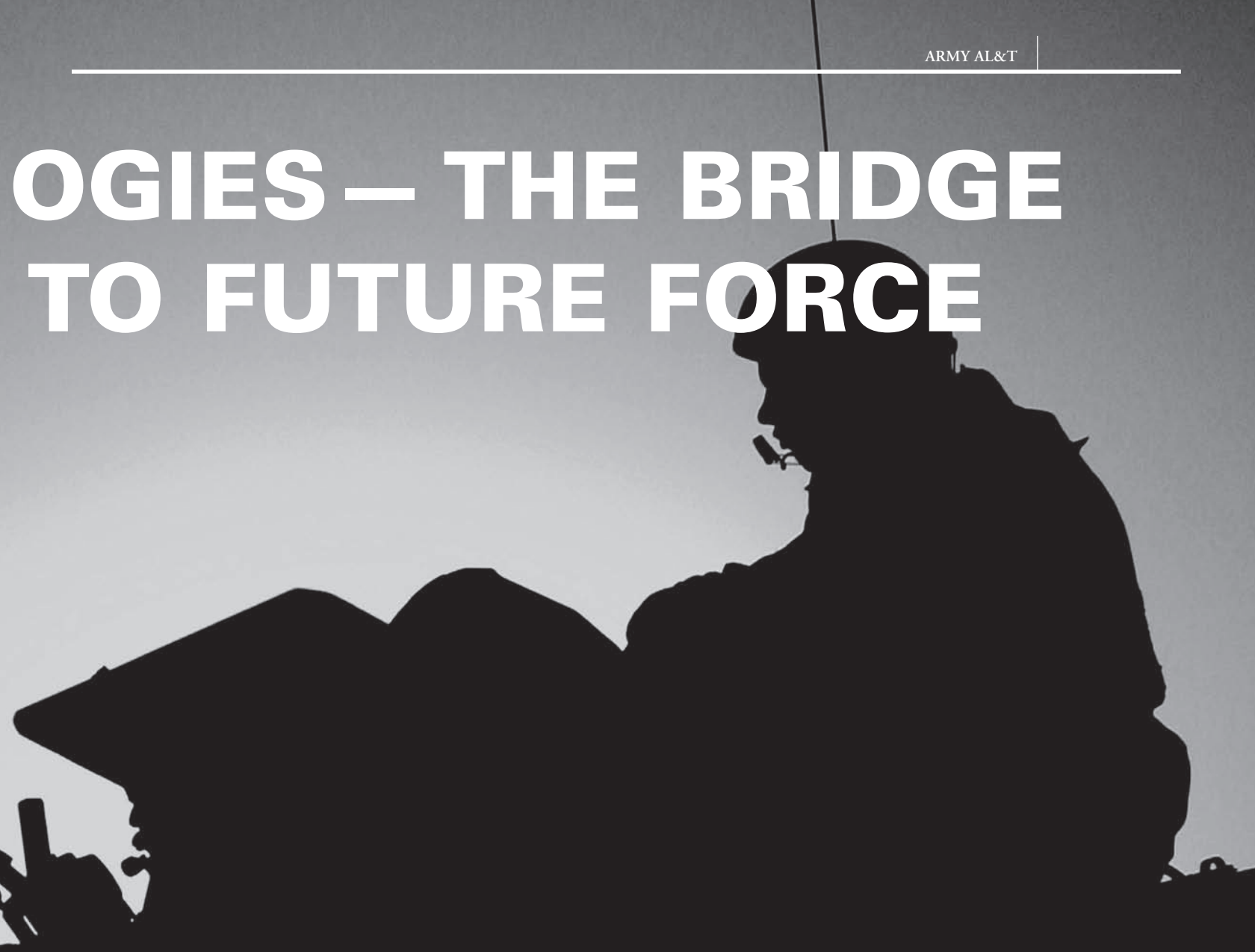
In summer 2004, the Army directed a change to the Future Combat Systems (FCS) program, the scope of which included numerous improvements aimed at strengthening the Future Force while also benefiting the Current Force. This modification covered four major additions:

- **A comprehensive experimentation and technical maturation program.**
- **The return of five major systems previously deferred in the original FCS program.**
- **The extension of the program schedule.**
- **The spin out (SO) of FCS capability to the Current Force.**

SO technology has already benefited Current Force systems like the Bradley Fighting Vehicle. Here, SGT Tavarance Jones, 70th Armor Regiment, 3rd Brigade, 1st Armored Division, provides overwatch during a patrol July 16, 2005, near Mushada, Iraq. (U.S. Air Force photo by TSGT Russell E. Cooley IV, 1st Squadron Combat Camera.)

OGIES — THE BRIDGE TO FUTURE FORCE



This article will describe the objectives, content and approach to fielding FCS capability to the Current Force in what has become known as FCS SOs. Technology SOs, four in all, implemented in 2-year cycles, have been conceived as an opportunity to improve the Current Force through early delivery of selected FCS capabilities.

SO Objectives

Overall, SO objectives fall into three categories. The first is to provide a qualified set of Future Force equipment and software to the Current Force that incrementally fills Army capability gaps over time. Structurally, the Army will provide four increments of SO capability to the Current Force with insertions in FYs 08, 10, 12 and 14. The key elements of Future Force equipment are the network backbone centered on the Joint Tactical Radio System (JTRS), FCS Battle Command and the System-of-Systems Common Operating Environment (SOSCOE). At each of the four SO increments, the network backbone will increase functionally until it approaches the capability of the FCS Unit of Action (UA). Additionally, each SO will add qualified FCS programs and components to enhance situational awareness (SA), force protection and lethality.

The second SO objective is to target enhancement of selected Current Force systems with portions of the Future Force architecture. Currently, the Abrams tank, Bradley Fighting Vehicle and Humvee will receive SO improvements.

The final objective is to initiate an Evaluation Brigade Combat Team (EBCT) that will provide dedicated support for SO and core FCS program verification and testing. The use of an EBCT is fundamentally essential for FCS program success in general. The EBCT will be the test bed to ensure that SO and core FCS program capability is ready for fielding to the Army. It will also become the mechanism by which an operational unit learns to employ newly provided SO technologies. In addition, the EBCT will present valuable opportunities to capture

both the technical and operational lessons learned and become a conduit to feed this information back to the developers and the U.S. Army Training and Doctrine Command (TRADOC) centers for system and doctrinal improvements. Under this concept, the EBCT will receive prototype systems for testing.

Following a 2-year shakeout period, SO material will be fielded to the modular brigades. The EBCT will grow in capability with each SO and ultimately become the Army's first FCS-equipped UA. In essence, the Army's transition to the FCS UA begins with the fielding of SO1 in FY08.

It's important to note that SOs are not individual programs but rather the development and distribution of capability that will follow standard acquisition regulations and mandates. For example, TRADOC is developing a Capability Development Document (CDD) for each SO package. Each SO will have a unique CDD that will contain tailored requirements from the core FCS UA Operational Requirements Document. Moreover, each SO will follow the same standard programmatic template. Technologies will be developed as part of the core FCS program and verified through the FCS test cycle. Unique SO testing will take place in separate technical field tests and limited user tests of specific FCS SO technologies and network connections. This data will support a Milestone C decision authorizing low-rate production, providing near production-ready systems for an initial operational test and evaluation (IOTE) of SO technologies and network connections. The last milestone will be a beyond low-rate initial production (LRIP) decision, setting in motion the production of SO systems for the modular brigades.

A second SO objective is to target enhancement of selected Current Force systems with Future Force architecture. The Bradley Fighting Vehicle will receive SO improvements. Here, Soldiers from Company H, 2nd Squadron, 11th Armored Cavalry Regiment, string concertina wire blockades near Tunis, Iraq, July 28, 2005. (U.S. Marine Corps (USMC) photo by LCPL Nicholas J. Lapinski, 2nd Force Service Support Group (2FSSG).)

The beyond LRIP decision highlights another unique aspect of SO development — namely that capabilities will in some cases be less than the threshold requirement for the core FCS program. One factor remains firm: all systems must provide military utility and be value added to the force. This provides the FCS program enormous flexibility to improve the speed at which Future Force capability is inserted into the Current Force. Consequently, as FCS designs mature, the program will field threshold-compliant systems to the Current Force.

These SOs introduce another innovative concept: a lead program executive office (PEO) tasked to field SO systems to Current Force units. The lead PEO provides one point of contact for the development of sustainment and fielding plans, for the execution of an IOTE, conduct of the beyond LRIP decision and the fielding of combat and communication systems to the

warfighter. The lead PEO is the primary voice for all PEO and program manager (PM) stakeholders and provides one face to the warfighter.

The relationship between the PM UA/Lead Systems Integrator (LSI) team and the lead PEO is one of partnership where emphasis between partners changes depending on where the SO is in the development cycle. Before Milestone C, the PM UA/LSI team will be in a leadership role during technology development while the lead PEO will be in support. After Milestone C, the roles reverse and the lead PEO will direct the process. For SO1, PEO Ground Combat Systems will be the lead PEO. To emphasize the critical role of PEO Command, Control and Communications Tactical (C3T) as the Current Force Network Architect, PEO C3T has a critical deputy role to the lead PEO in SO1.

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While defining each SO slice, the Army and UA program leaders knew that SO increments after the first would be subject to change depending on the maturity of FCS technology, needs of the Army and funding availability. In fact, the configuration of each SO increment could change depending on what is learned from the EBCT warfighter. However, in the spirit of the Army's budgeting process, each SO package was defined with a fairly high degree of detail. The remainder of this article will describe each increment, with emphasis on SO1 content.

SO1

One essential SO1 element is the Future Force network foundation that will steadily increase with capability through successive SOs. To build this foundation, increment 1 will center on the integration of FCS network components into Abrams, Bradleys and Humvees. The FCS package, or B-Kit, will consist of a state-of-the-art FCS Integrated Computer System, SOSCOE, the JTRS Cluster 1 radio with Wideband Networking Waveform and Soldier Radio Waveform, battle command and network software.

The B-Kit will be an appliqué configuration that will exchange information with the vehicle's Force XXI Battle Command Brigade and Below

As FCS designs mature, the program will spiral threshold-compliant systems to the Current Force and platforms such as the Humvee. Here, Soldiers and William Torres, a civilian contractor, patrol Main Supply Route Tampa near Tunis, Iraq, July 31, 2005. (USMC photo by LCPL Nicholas J. Lapinski, 2FSSG.)

The M1A1 Abrams Main Battle Tank is one platform that will benefit from SO improvements in the near future. Here, Marines from the 2nd Marine Division (MARDIV) conduct counter-insurgency operations near Karabilah, Iraq, June 20, 2005. (USMC photo by CPL Neill A. Sevelius, 2nd MARDIV Combat Camera.)

(FBCB2) system, allowing the operator to maintain SA of FCS sensor data and control FCS subsystems. Additionally, SO1 will include the deployment of the Urban-Unattended Ground Sensor (U-UGS) and Tactical-UGS (T-UGS) configurations. The T-UGS will feature magnetic, acoustic, radiological, visual and seismic monitoring of threats, providing early warning to unit commanders. The U-UGS will provide intrusion detection and imaging of cleared areas.

SO1 will also feature the introduction of the Intelligent Munitions System (IMS) with a combination of sensors and lethal munitions in antivehicular and antipersonnel configurations. Sensor data from both the IMS and UGS will be managed by the FCS Sensor Data Manager, routed through a Level One fusion generator, assembled into battlespace objects and distributed on the FBCB2 network for situational understanding. Sensor control will be through the FBCB2 display.

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SO1's final element addresses improvements in lethality: the Non-Line-of-Sight Launch System (NLOS-LS) featuring 15 40-kilometer range Precision Attack Missiles (PAMs) per container launch unit. NLOS-LS will be controlled via the existing Current Force Advanced Field Artillery Tactical Data System. Missile guidance will come from either infrared (IR) or semiactive lasing, both functions to be embedded in each PAM.

Later SOs build on the Future Force network and also add increasing levels of Future Force capability. For example, SO2 will add FCS communication relay packages and electro-optic (EO)/IR sensors on unmanned aerial vehicles to extend the range of Future Force communications and sensor capability in the modular brigade.

SO3 adds a significant leap in capability with the addition of the FCS suite of unmanned ground vehicles (UGVs). They include the Small UGV, Armored Robotic Vehicle (ARV)-Assault (Light), ARV-Assault, ARV-Reconnaissance, Multifunctional Utility/Logistics Equipment Vehicle (MULE)-Countermine and MULE-Transport. In each of these SO packages, Future Force network tools will grow with increasing levels of battle command — including fusion, sensor data management and embedded training — and network management to the point where SO4 approaches full UA capability.

The SO concept offers a great opportunity to provide the warfighter Future Force benefits years before the first UA is introduced. In effect, the SOs become the Army's bridge to the Future Force. In addition, SOs provide a learning laboratory for all stakeholders — from warfighters to developers — and the mechanism to ensure the first UA becomes a timely and affordable reality.

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